

Editorial

Massive Transfusion Protocol – Is Pakistan ready to implement it?

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Blood is the elixir of life. It is one of very few medical interventions which can lead to the difference in a patient outcome in being alive or dead.⁽¹⁾ Intravenous fluids other than blood can mitigate some of the challenges of a hemorrhagic shock such as in trauma, but recent studies show that blood is the key component as it not only provides with the circulating plasma volume but also the oxygen carrying capacity of the red blood cells which is imperative in an under-perfused state secondary to critical injury.⁽²⁾

In emergency departments across Pakistan, the failure to provide time critical, safe blood transfusion to a patient is mainly because of its lack of understanding to prepare beforehand, for such an anticipated transfusion. It is also unfortunate that the onus of arranging blood is on the relatives of the trauma patient, who are already in state of shock and in denial because of an unexpected tragedy. Conversely, the concept of massive transfusion protocol has already been established in the developed countries to support the patient in that critical stage.

Massive transfusion protocol (MTP) is an in-hospital emergency response system that is activated when massive quantity of blood is required or expected to be transfused in specified time interval.⁽³⁾ According to Advanced Trauma Life Support (ATLS) massive blood transfusion has been defined as transfusing more than 10 units of blood in a 24-hour period or transfusing more than 4 units per hour.⁽⁴⁾ In Emergency departments, few of the criteria that are used apart from the estimated blood loss are the shock index, or the recently validated ABC score (penetrating injury, SBP<90, FAST positive or HR>120) where more than 2 positive values had a 76-90% sensitivity and 87% specificity in identifying the need of a massive transfusion.⁽⁵⁾

Once activated, the blood bank processes the request and will issue pre-screened first cooler, which usually has 4 PRBCs, 4 Platelets and 4 FFPs to be transfused usually in 1:1:1 ratio.^(6,7) This ratio is important as it urgently corrects the coagulopathy which is one of the factors in the lethal triad of death. If the patient continues to require more transfusion, a second cooler containing 4 PRBCs, 4 Platelets and 4 FFPs along with other blood products is issued. This protocol is continued till the de-activation of the protocol. Calcium products after massive transfusion are also part of the MTP. Reporting of critical blood values when the protocol is activated can guide further the ER physician according to the need of further transfusions. During this time period, ongoing

assessments are being made to identify the source of bleeding and steps to resolve it such as endoscopy, angio-embolization or surgery.⁽⁶⁾ Investing in rapid transfuser systems in ER can also be a game changer as these devices can rapidly transfuse up to high rates as much as 300-500 ml/min and warm the blood at human temperature, thus negating the effects of possible hypothermia associated with massive transfusions.

Few, if any, hospitals in Pakistan are utilizing the concept the massive transfusion protocols for the emergency patients.⁽⁸⁾ Implementing it would be a systems improvement, where it would not only help in saving lives but also streamlining the process. It will communicate the urgency across the board with which the transfusion process needs to be done.

One of the main barriers to developing these protocols in Pakistan is that most physicians working in ER are unaware that such protocols exist in the developed world and do not advocate for it in their settings. If massive transfusion is done, it is without regards to any protocol and at times can lead to adverse effects. Educational intervention for the emergency physicians is highly required so that they are abreast with the latest resuscitation methods.

Secondly, the collaboration between emergency departments and blood banks is patchy and at times, nonexistent. The blood banks are usually oblivious of the criticality of the situation and demand unnecessary blood work even in an emergency situation, whereas the doctors are unaware of what is the capability of their local blood banks in providing urgent transfusion. This communication is a must, if massive transfusion protocols are to be devised and implemented.

Safe screening and cross match are vital to prevent transfusion reactions and/or blood borne virus transmission during this stressful situation which can be error prone. Two-person verification before transfusions and proper documentation can prevent most of these avoidable errors.

The cost of implementing such a system will be on the patient and the challenge would be who would pay for it if it were not utilized. In such a case, a policy needs to be devised so that blood can be timely returned if not utilized to prevent wasting such a critical resource.

RECOMMENDATIONS

- Timely identifying a patient who would require massive blood transfusion by utilizing validated scores such as ABC score.
- Devise a method to activate it – phone numbers, identification of doctor/nurse who activates it.
- Collaborating with the hospital blood bank and hematologists to devise massive transfusion protocols which are feasible according to the local circumstances
- Public health officials – for public health educational interventions for the community, to devise blood donation drives so that we have adequate blood products in time of need.
- A national consensus through the Emergency Medicine society to educate the EM graduates, blood bank staff and hematologists to work together in saving patients life through MTP.

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